



COLUMBIA UNIVERSITY
MEDICAL CENTER

Epidemiology, Pathology and Breast Cancer Risk

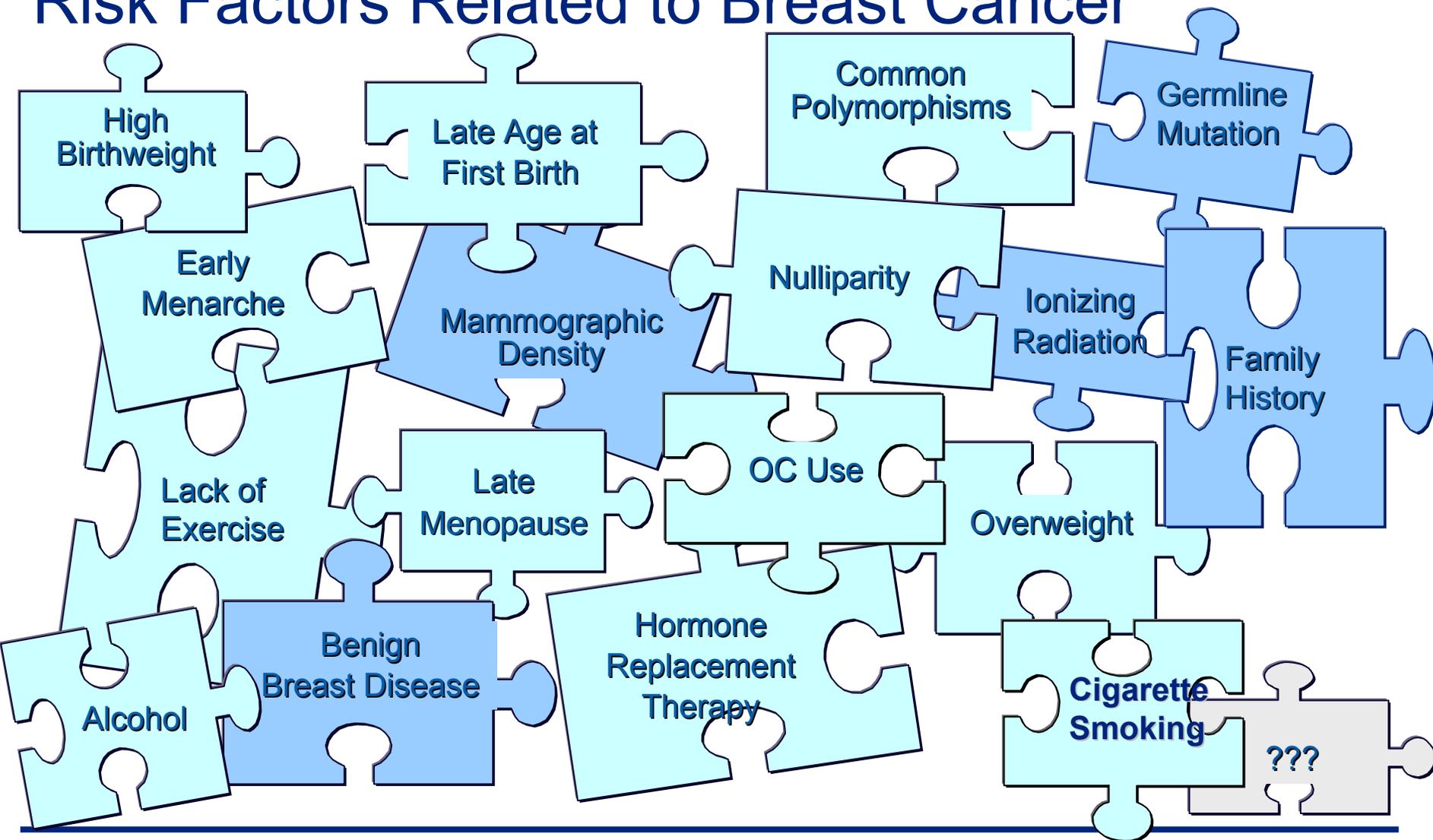
Mary Beth Terry, PhD

Department of Epidemiology

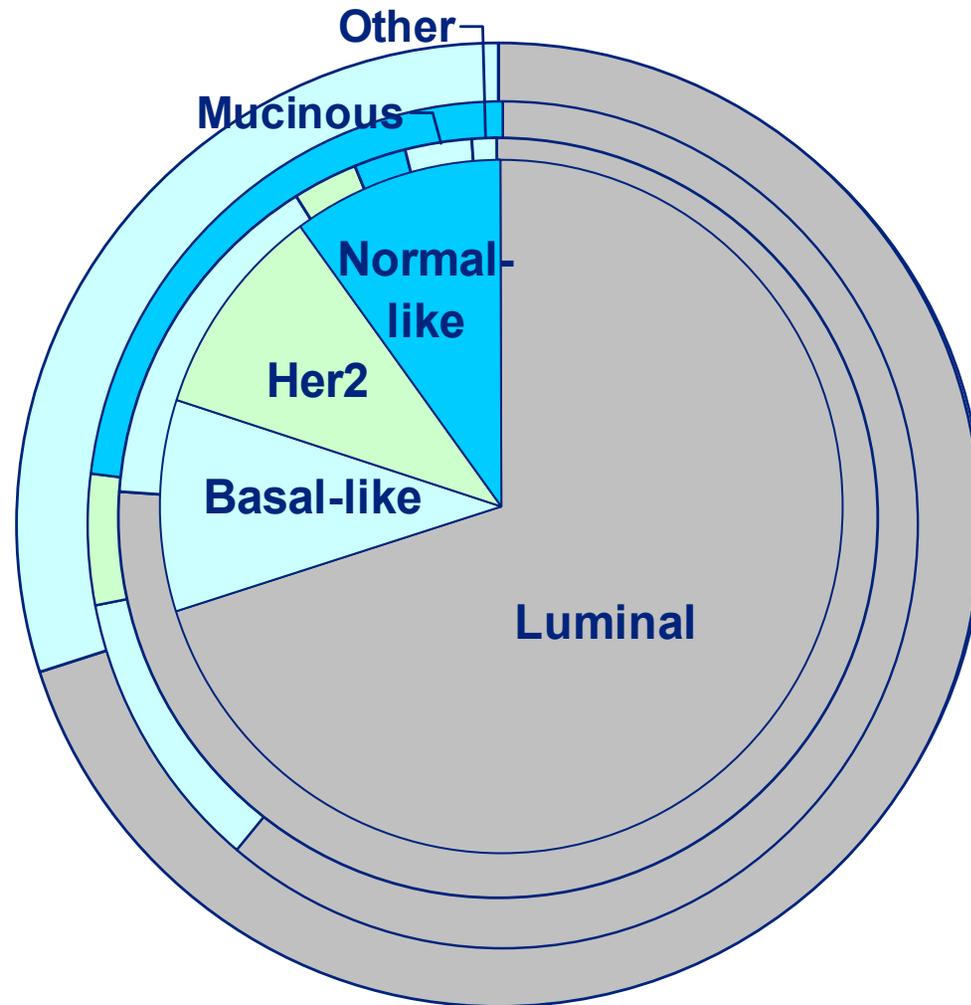
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Risk Factors Related to Breast Cancer



Breast Cancer: A Heterogeneous Disease



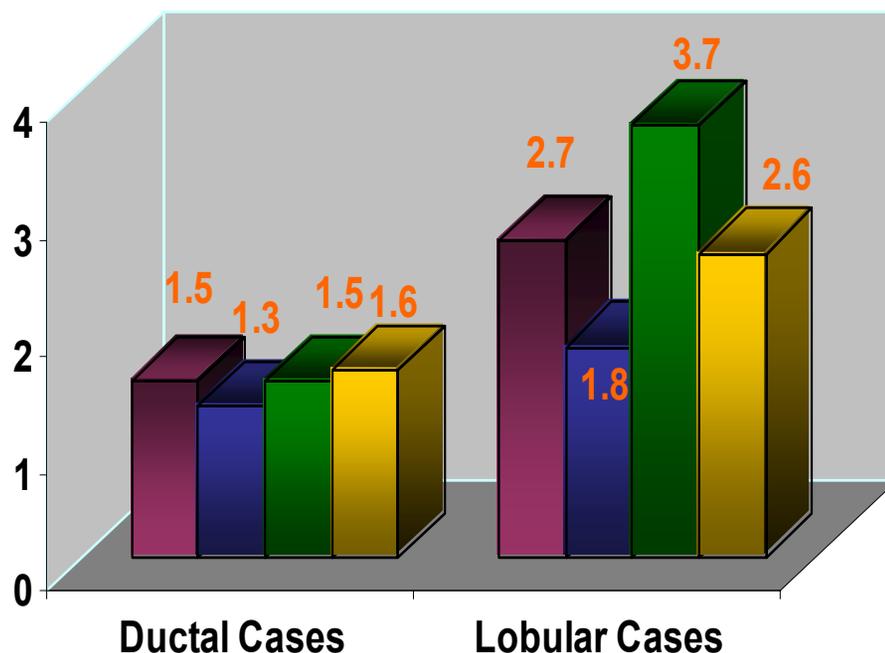
Risk Factors by Hormone Receptor Status and Histologic Type

	Hormone Receptors		Histologic Type
Risk Factors			
Reproductive factors	+/-		Ductal ++, Lobular +
Increased BMI	HR +		Ductal ++, Lobular +
Alcohol drinking	HR +		Lobular ++, Ductal +
Cigarette smoking	+/-		
OC use	+/-		Lobular +
HRT use	HR +		Lobular ++, Ductal +
Aspirin use	HR +		
Family history	+/-		Medullary
Demographic Characteristics			
Younger age	HR -		Medullary
nonwhite	HR -		Medullary, Mucinous



HRT use and Breast Cancer Risk by Histologic Type

Duration of HRT Use

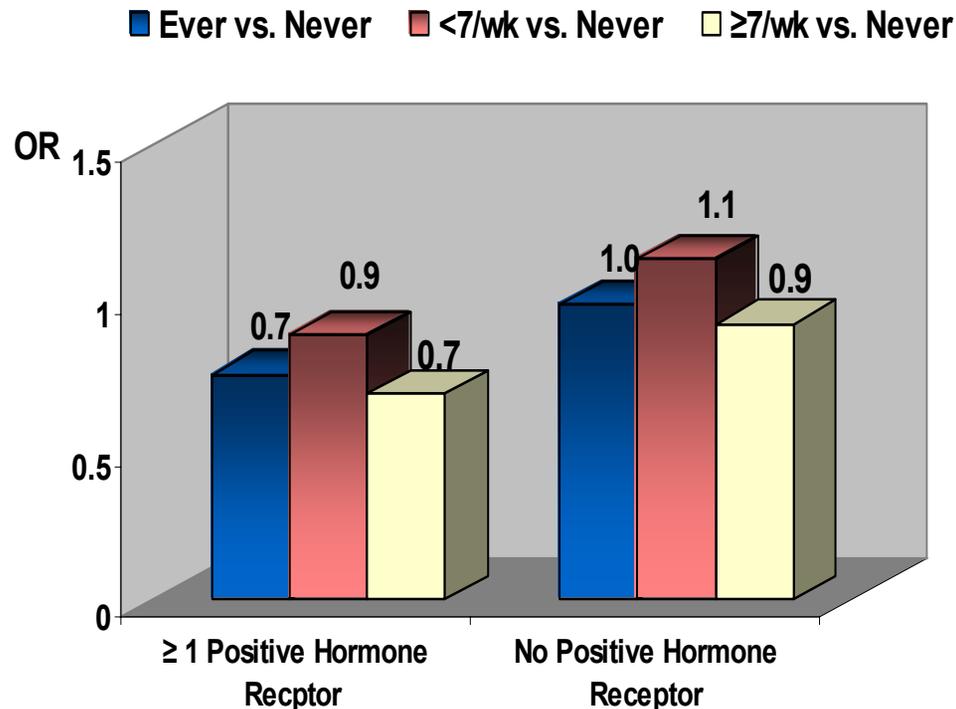


- ❑ 975 invasive breast cancer cases and 1007 population-based controls
- ❑ Combined estrogen and progestin HRT use
- ❑ Risk of invasive lobular and ductal breast carcinomas associated with HRT use
- ❑ HRT use is associated with BC risk, particularly invasive lobular tumors

(Li CI et al 2005 JAMA)

Aspirin Use and Breast Cancer Risk by Hormone Receptor Status

Intensity of Aspirin Use



- Long Island Breast Cancer Study; 1442 cases and 1420 controls provided NSAIDs use data
- Ever use aspirin 1/wk for ≥ 6 month
- Risk of BC associated with aspirin intake by hormone receptor status
- Inverse association between aspirin and BC risk only among hormone receptor positive tumors

(Terry MB et al 2004 JAMA)



Breast Cancer Risk Factors by Molecular Phenotypes

Study Design

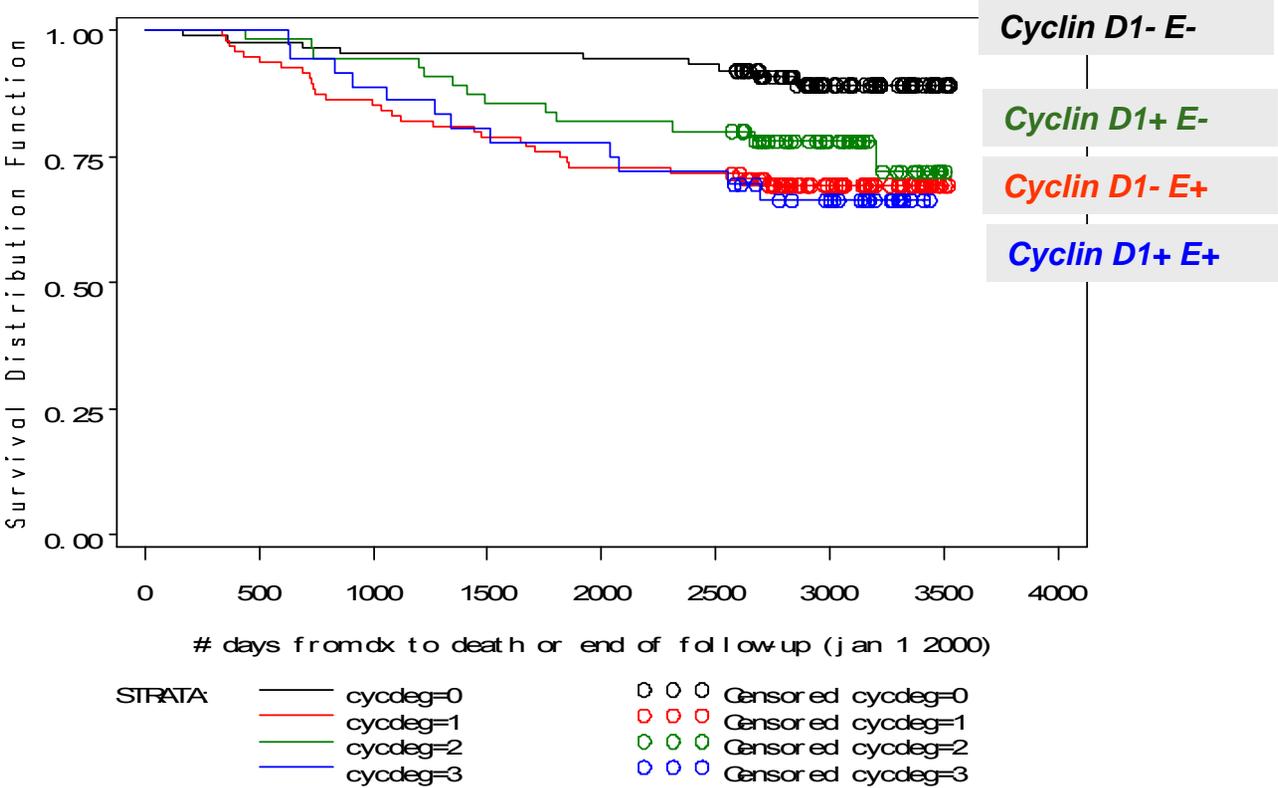
- Population-based case-control study (509 Cases and 462 Controls)
- Conducted in New Jersey b/w 1990-92
- Tissue block available for 78.8% of cases
- In-person interview with women under age 45 yrs

Study Results

- Smoking by p53 expression
- OC use by Her2neu expression
- OC use by Cyclins expression
- Breast cancer survival by Cyclins expression



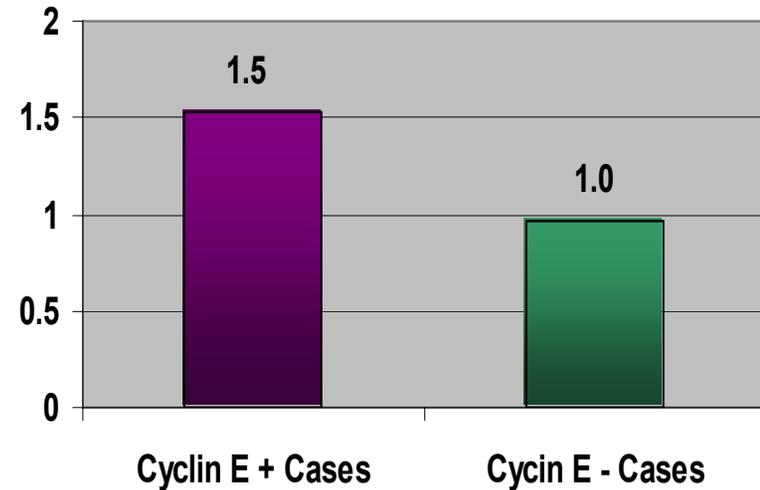
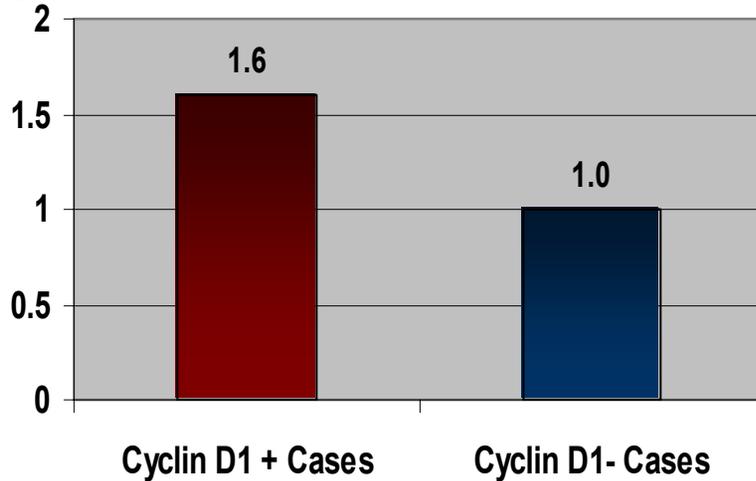
Survival of Breast Cancer Cases by Joint Cyclin D1 and E Status



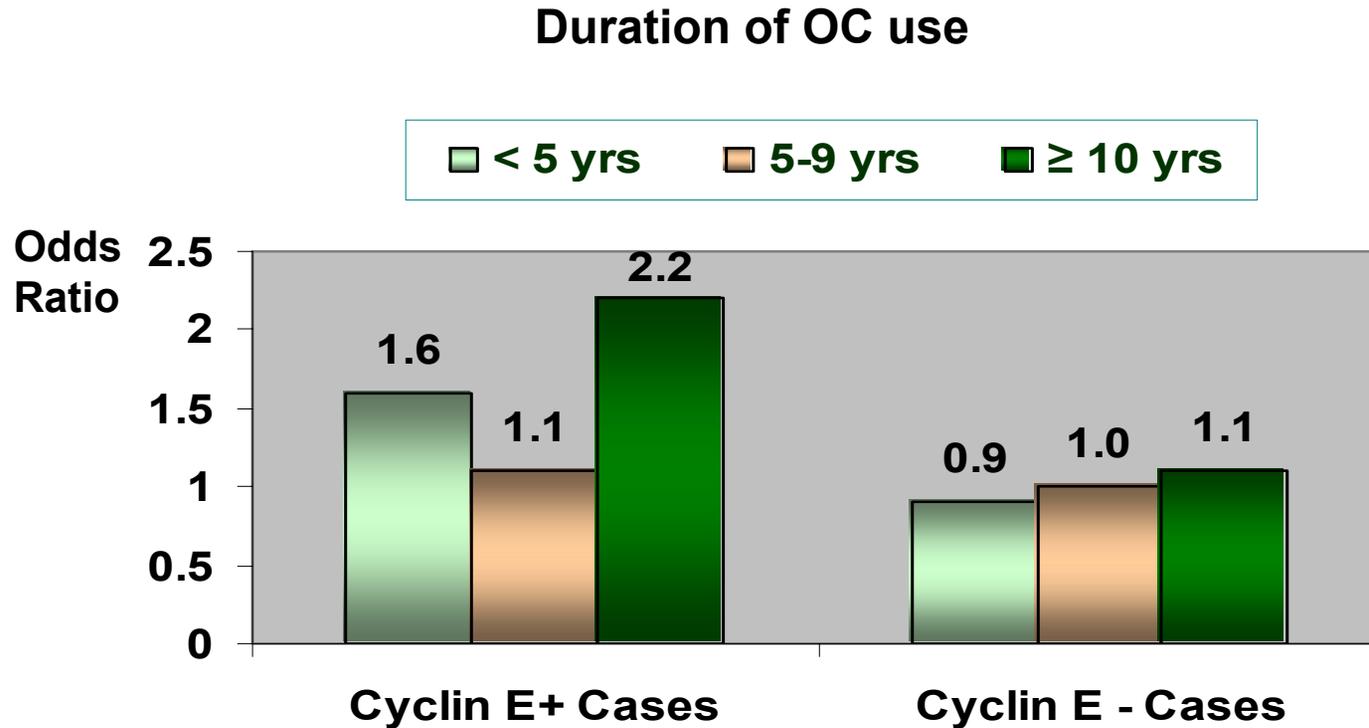
Ever OC Use and Breast Cancer Risk by Cyclin D1 and E status

OC use (Ever vs. Never)

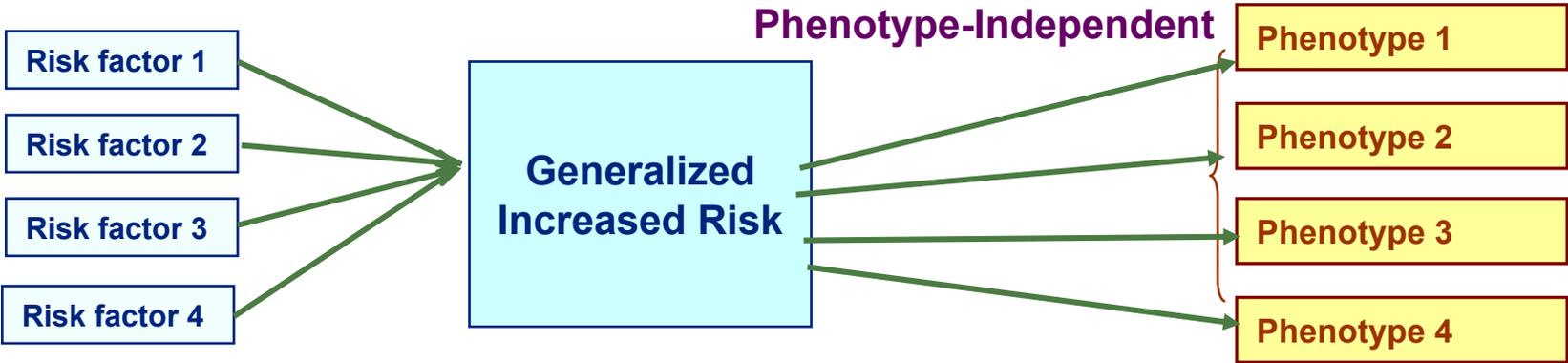
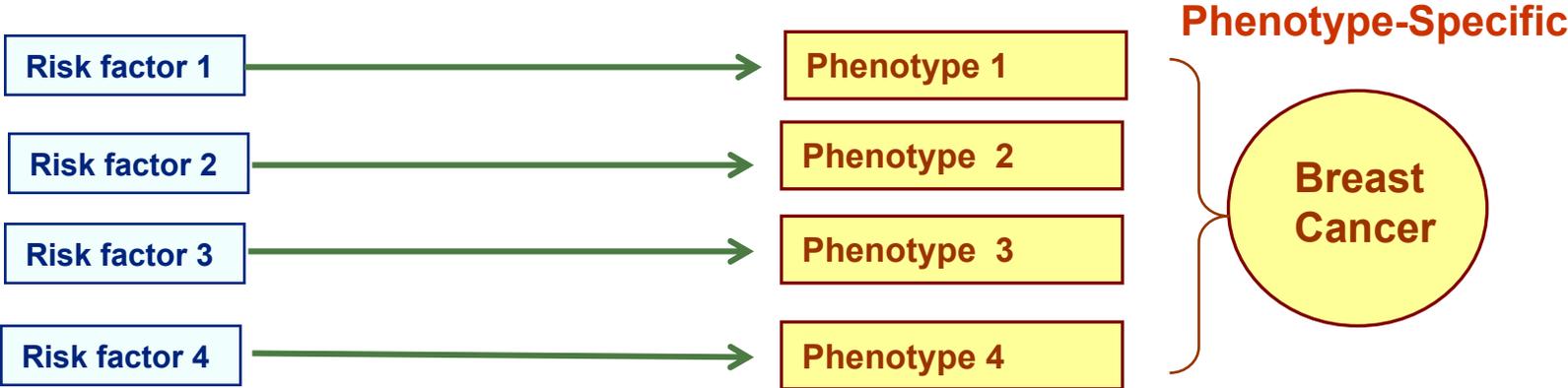
Odds Ratio



Duration of OC Use and Breast Cancer Risk by Cyclin E status



Competing Hypotheses



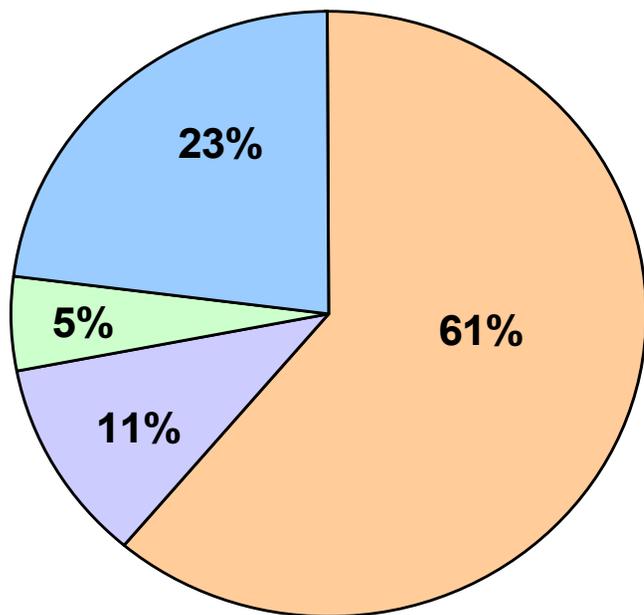
Distribution of Histologic Types

	Australia (N=574)	Ontario (N=1215)	California (N=1165)	Total (N=2646)
Ductal, NOS	77%	71 %	83 %	76 %
Lobular	16%	19 %	7 %	15 %
Medullary	3%	3 %	4 %	3 %
Tubular	2%	3 %	2 %	2 %
Mucinous	1%	3 %	3 %	3 %
Others	1%	2 %	1 %	1 %

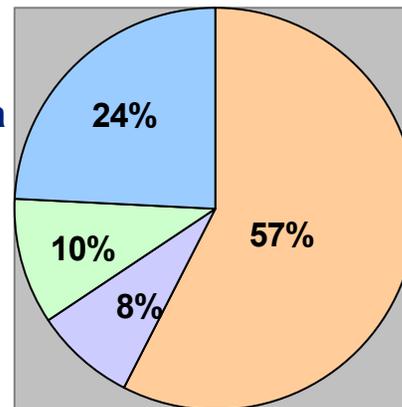


Distribution of Hormone Receptor Status

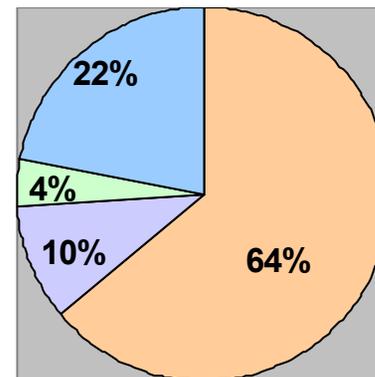
Among All 3 Centers



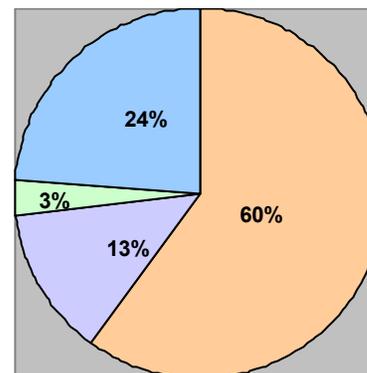
Australia



Ontario



N California



ER+PR+ ER+PR- ER-PR+ ER-PR-

Summary

- 1) Molecular signatures of exposure (e.g., aflatoxin and liver cancer)
 - 1) Molecular phenotype
 - a) oligo-phenotype
 - b) global expression arrays
 - 2) Histology
 - 3) Null finding would be informative as well
- 2) Impact on cancer prevention



Acknowledgements

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Analytic Working Group

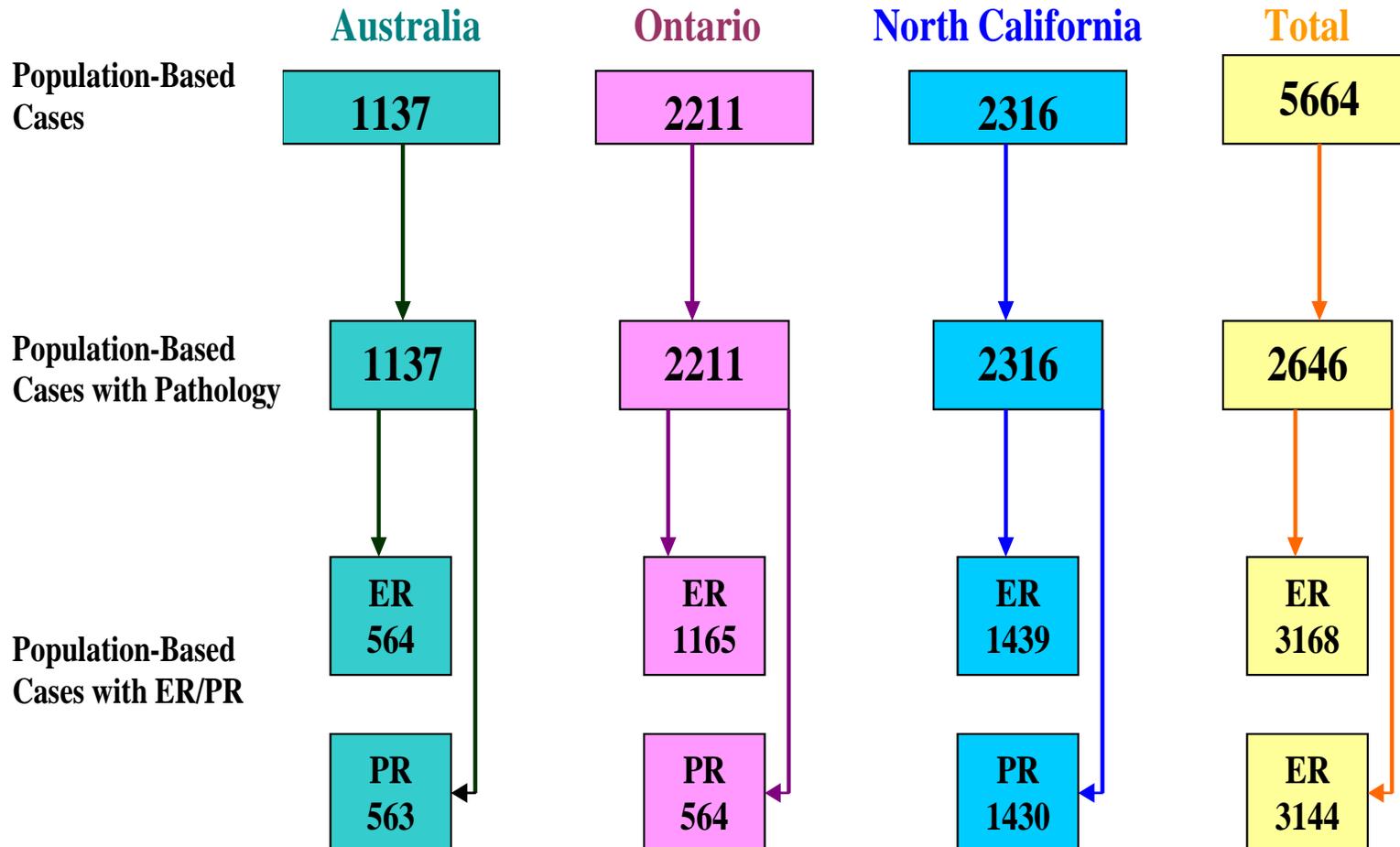
Breast -CFR

New Jersey Study: Marilie Gammon, Ph.D.

K07 National Cancer Institute

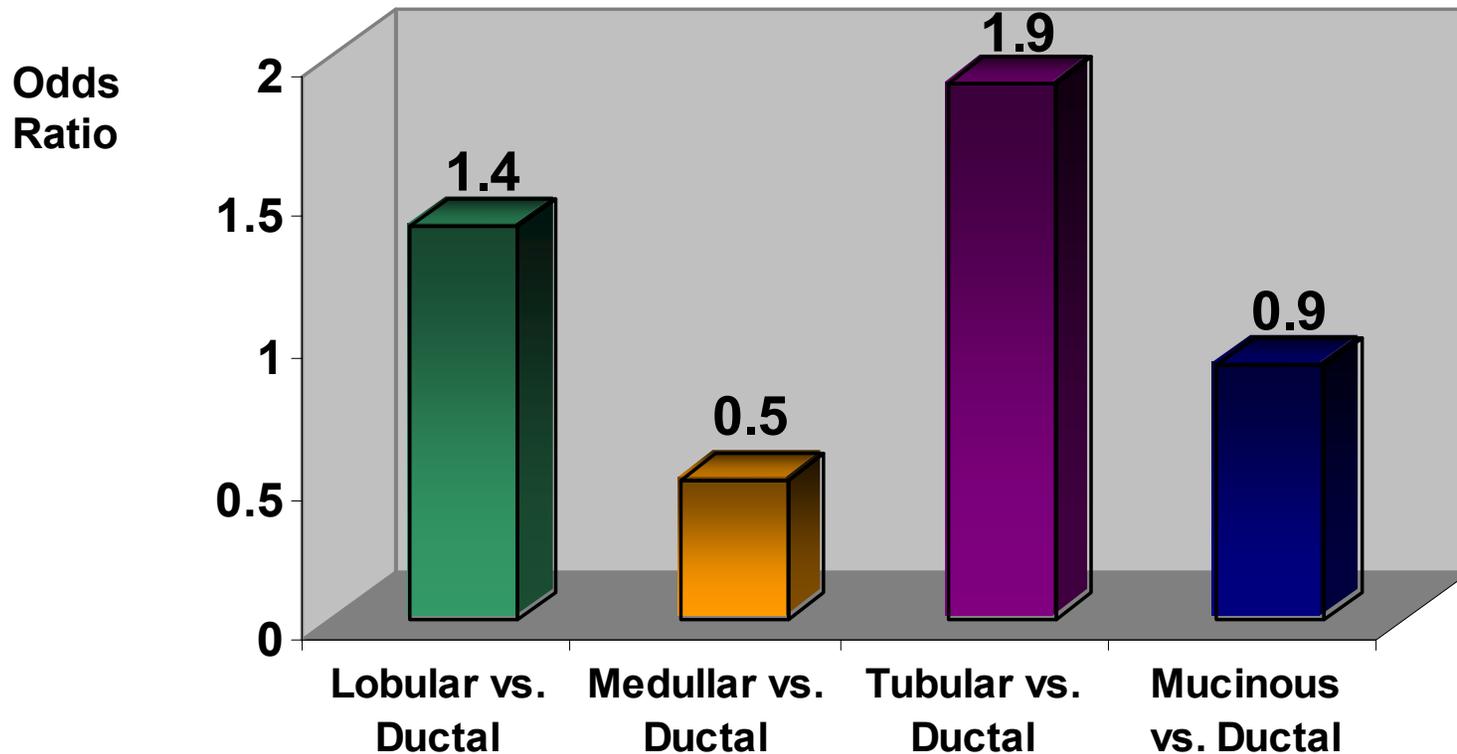


Identification of pathology and ER/PR status

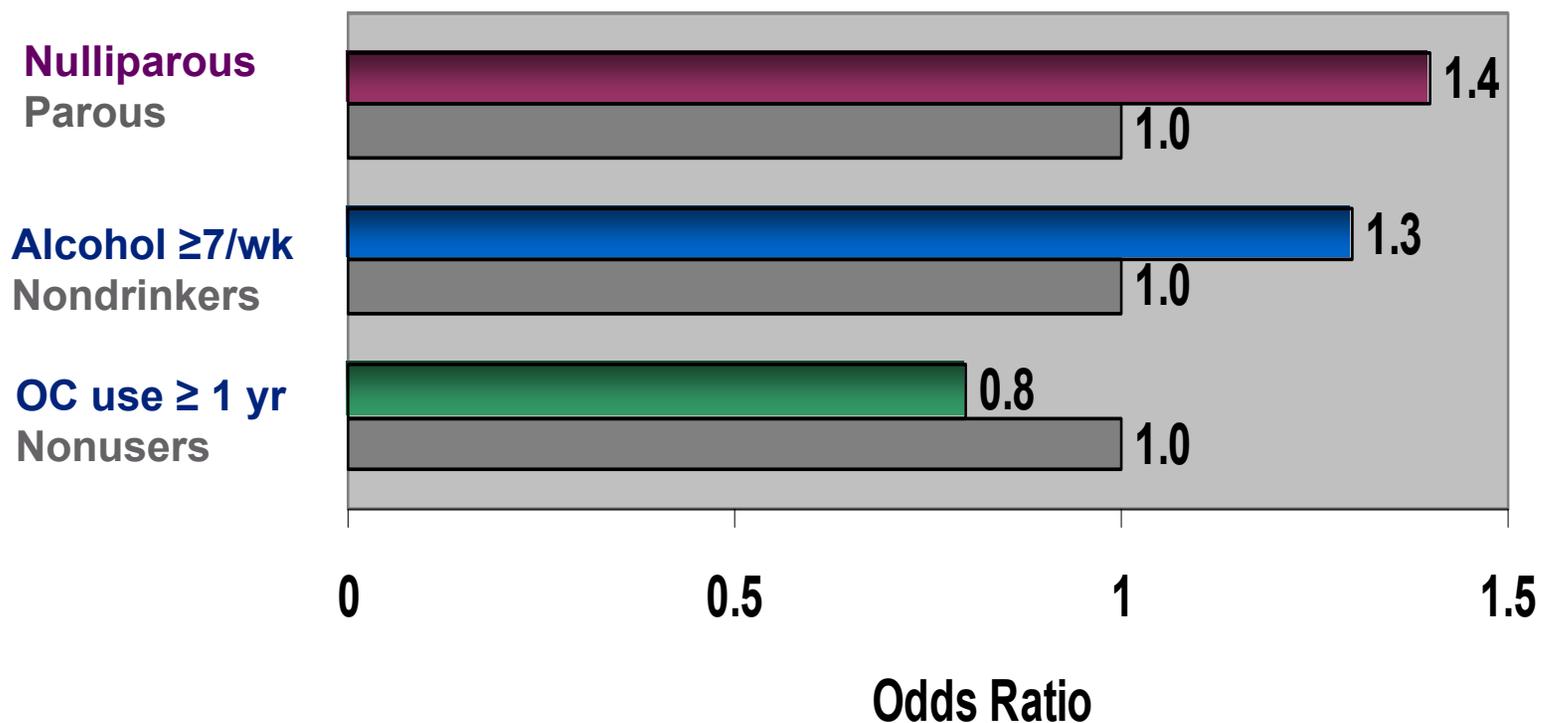


Smoking and Breast Cancer Risk by Histologic Type

Smoking (Ever vs. Never)



Parity, Alcohol Drinking and OC use Associated with Breast Cancer Risk by Hormonal Receptor Status



≥ 1 Positive Hormone Receptors vs. No Positive Hormone Receptors